

1 1. (Original) A method, comprising:
2 defining, by an absolute location, one or more geographical regions in
3 which one or more fixed resources are located;
4 defining a location of each of the one or more fixed resources within a
5 geographical region, the location of each fixed resource being a relative location
6 that is defined relative to the absolute location of the geographical region in which
7 the fixed resource is located; and
8 storing the relative location of each fixed resource in a hierarchical
9 directory structure having one or more levels corresponding to the one or more
10 geographical regions, the relative location of each fixed resource being stored in
11 the directory level corresponding to the geographical region from which the
12 relative location of the fixed resource is derived.

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14 2. (Original) The method as recited in claim 1, wherein there are
15 multiple geographical regions, and each geographical region is defined so that all
16 but a largest geographical region are encompassed by at least one of the other
17 geographical regions.

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19 3. (Original) The method as recited in claim 2, wherein each
20 geographical region has a different size than the other geographical regions.

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22 4. (Original) The method as recited in claim 1, wherein each of the one
23 or more hierarchical directory levels has a class name selected from the following
24 class names: country, state, territory, county, city, campus, building, area or floor.
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1 5. (Original) The method as recited in claim 1, wherein the absolute
2 location is represented by latitude and longitude coordinates.

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4 6. (Canceled)

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6 7. (Original) The method as recited in claim 1, wherein the relative
7 location is represented by linear unit coordinates in relation to a known absolute
8 location.

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10 8. (Original) The method as recited in claim 1, wherein the location of
11 each of the one or more fixed resources is stored as an object with one or more
12 properties associated with the fixed resource.

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14 9. (Original) The method as recited in claim 1, wherein the network
15 comprises more than one server, and the hierarchical directory structure and the
16 information stored therein is replicated on each server in the network.

1 10. (Original) A method for searching for a location of a nearest fixed
2 resource in a wireless network having one or more fixed resources, the method
3 comprising:

4 receiving a request at a network server from a computing unit for a location
5 of a nearest fixed resource;

6 determining a location of the computing unit;

7 searching a hierarchical directory structure containing fixed resource
8 objects for a match with the requested fixed resource, each fixed resource object
9 being stored in the hierarchical directory structure according to a location of each
10 fixed resource;

11 determining which fixed resource object has a location that is nearest to the
12 computing unit; and

13 transmitting data regarding the location of the nearest fixed resource to the
14 computing unit.

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16 11. (Original) The method as recited in claim 10, wherein the fixed
17 resource objects are stored in the hierarchical directory structure according to a
18 relative location of the fixed resource within a base geographical region in which
19 the fixed resource is located, the base geographical region being stored in the
20 hierarchical directory structure according to an absolute location of the base
21 geographical region, the base geographical region being located within one or
22 more extended geographical regions which are stored in the hierarchical directory
23 structure according to an absolute location of each extended geographical region.
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1 12. (Original) The method as recited in claim 11, wherein the searching
2 the hierarchical directory structure further comprises beginning at a geographical
3 region in which the computing unit is connected, searching the geographical region
4 and, if a matching fixed resource is not found, repeatedly searching a next-largest
5 of the one or more of the extended geographical regions until a match is found or
6 until all the geographical regions have been searched and no match is found.

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8 13. (Original) The method as recited in claim 11, wherein the searching
9 the hierarchical directory structure further comprises searching only a primary
10 geographical region in which the computing unit is located and any secondary
11 geographical regions that may be encompassed by the primary geographical
12 region.

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14 14. (Original) The method as recited in claim 10, wherein the computing
15 unit is a mobile computing unit operating within the scope of the wireless network.

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17 15. (Original) The method as recited in claim 10, wherein the data
18 transmitted regarding the location of the fixed resource comprises directions from
19 the location of the computing unit to the location of the fixed resource, the
20 directions being displayable on the computing unit.

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22 16. (Original) The method as recited in claim 10, wherein:
23 the request is a request for a location of a nearest fixed resource having
24 certain properties;
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1 the searching further comprises searching for a match of the requested fixed
2 resource having the requested certain properties; and

3 the determining comprises determining which fixed resource object having
4 the requested certain properties represents a fixed resource that is nearest to the
5 computing unit.

6
7 17. (Original) A method of storing fixed resource information about one
8 or more fixed resources of a wireless network in one or more computer-readable
9 media, the method comprising:

10 naming a fixed resource object with an object name that denotes a location
11 of a fixed resource represented by the object, the fixed resource object including
12 properties of the fixed resource; and

13 storing the fixed resource object according to the object name in a
14 hierarchical directory structure in one or more computer-readable media, the
15 hierarchical directory structure having multiple levels, each level representing a
16 geographical region in which the fixed resource is located.

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18 18. (Original) The method as recited in claim 17, the hierarchical
19 directory structure having a lowest level and a highest level, the lowest level
20 corresponding to a smallest geographical region covered by the wireless network,
21 the highest level corresponding to a largest geographical region covered by the
22 wireless network.

1 19. (Original) The method as recited in claim 17, wherein the network
2 comprises one or more servers containing computer-readable media, and wherein
3 the storing the object further comprises storing the object in the computer-readable
4 media of each of the one or more servers.

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6 20. (Original) The method as recited in claim 17, wherein the location of
7 the fixed resource is a location that is defined relative to an absolute location.

8
A 1 9 21. (Original) The method as recited in claim 20, wherein the absolute
10 location is a geographical region that is located within one or more other
11 geographical regions, each geographical region corresponding to one level in the
12 hierarchical directory structure, and wherein the object name associated with the
13 fixed resource object comprises each geographical location in which the fixed ..
14 resource is located and the relative location of the fixed resource.

15
16 22. (Original) The method as recited in claim 17, wherein there are
17 multiple geographical regions that are divided into classes, each class
18 corresponding to a level in the hierarchical directory structure, each geographical
19 region belonging to one of the following classes: country, state, territory, county,
20 city, campus, building, area or floor.

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22 23. (Canceled)
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24. (Original) A location-aware computer program, comprising:
a location subsystem to determine a location of a user within at least one geographical area;
a resource database having records that each contain information about a resource, including a location of the resource, each record being ordered according to the location of the resource represented by the record; and
a query processor that receives a query from the user for a resource that is nearest to the user and returns a location of a resource that is nearest to the user.

25. (Original) The computer program recited in claim 24, wherein the location subsystem comprises a locator that determines a user's location.

26. (Original) The computer program recited in claim 24, wherein the resource database further comprises a directory tree structure having multiple levels, each level representing a geographical area.

27. (Original) The computer program recited in claim 24, wherein the query processor receives the location of the user and determines which resource is nearest to the user by searching the resource database beginning with the geographical area in which the user is connected to the network and, if a resource is not found, searching at least one other geographical area for a resource matching the query.

1 28. (Original) The computer program recited in claim 24, wherein the
2 location of the resource is a relative location stored with coordinates that are
3 relative to a geographical area which is defined in absolute coordinates.

4
5 29. (Original) The computer program as recited in claim 24, wherein:
6 the information about a resource further includes properties of the resource;
7 and

8 the query processor is further configured to receive a query from the user
9 for a resource that is nearest to the user and that has at least one particular
10 property, and to return a location of a resource that is nearest to the user and has
11 the particular property requested by the user.

12
13 30. (Original) A wireless network system, comprising:
14 one or more servers having non-volatile memory;
15 at least one mobile computer located within multiple geographical areas
16 covered by the wireless network system;

17 at least one fixed resource located within the geographical areas, the
18 geographical areas each having an absolute location, the fixed resource having a
19 relative location that is relative to the absolute location of a geographical area in
20 which the fixed resource is located;

21 a location subsystem to determine the relative location of a mobile
22 computer within a geographical area; and

23 a resource database stored in the memory of at least one of the servers, the
24 resource database being organized in a directory tree structure having multiple
25 levels where each of the levels corresponds to a geographical area covered by the

1 wireless network, a highest level corresponding to a largest geographical area and
2 a lowest level corresponding to a smallest geographical area, wherein the relative
3 location of the fixed resource is stored at a level which represents a smallest
4 geographical region in which the fixed resource is located.

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6 31. (Original) The wireless network system as recited in claim 30,
7 wherein information regarding properties of each fixed resource is stored in the
8 resource database together with the relative location of the fixed resource.

9
10 32. (Original) The wireless network system as recited in claim 30,
11 wherein the relative location of the fixed resource is stored within the lowest level
12 of the directory tree structure.

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14 33. (Original) The wireless network system as recited in claim 30,
15 wherein the fixed resource is stored in the database as a fixed resource object, the
16 fixed resource object having a name associated with it that includes names
17 assigned to each of the geographical regions that encompasses the fixed resource.

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19 34. (Original) The wireless network system as recited in claim 30,
20 wherein the fixed resource is stored in the database as a fixed resource object, the
21 fixed resource object including properties of the fixed resource.

1 35. (Original) The wireless network system as recited in claim 30,
2 wherein the absolute locations are represented as longitude and latitude
3 coordinates.

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5 36. (Canceled)

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7 37. (Original) The wireless network system as recited in claim 30,
8 wherein each server is configured to:

9 receive a request from the mobile personal computer, requesting the
10 location of a fixed resource that is nearest to the mobile personal computer;

11 determine the location of the mobile personal computer;

12 search the resource database for the location of the nearest fixed resource;

13 and

14 transmit data to the mobile personal computer containing information
15 regarding the location of the nearest fixed resource.

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17 38. (Original) The wireless network system as recited in claim 37,
18 wherein the data transmitted to the personal computer includes directions from the
19 location of the mobile personal computer to the location of the nearest fixed
20 resource.

1 39. (Original) The wireless network system as recited in claim 37,
2 wherein each server is further configured to search the resource database for the
3 location of the nearest fixed resource starting at a level in the directory tree
4 structure that corresponds to the geographical area in which the mobile personal
5 computer is connected, if a match is not found, continually searching a next-higher
6 level in the directory tree structure for a match until a match is found or until all
7 the levels have been searched and no match has been found.

8
9 40. (Original) A database, comprising:
10 multiple records associated with fixed resources in a wireless network; and
11 a directory tree structure to organize the records according to a location of
12 the fixed resource that the record represents.

13
14 41. (Original) The database as recited in claim 40, wherein the directory
15 tree structure comprises multiple levels, each level representing a geographical
16 area covered by the wireless network, a lowest level representing a smallest
17 geographical area in which a fixed resource may be located, and each subsequently
18 higher level of the tree structure representing increasingly larger geographical
19 areas which encompass the fixed resources.

20
21 42. (Original) The database as recited in claim 40, wherein each record
22 representing a fixed resource further comprises properties of the fixed resource
23 represented by the record.
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1 43. (Original) One or more computer-readable media containing the
2 database recited in claim 40.

3
4 44. (Original) A server in a wireless network that contains the database
5 recited in claim 40.

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7 45. (Original) A wireless network having more than one server, wherein
8 each of the servers contains the database recited in claim 40.

9
10 46. (Original) A wireless network as recited in claim 45, wherein the
11 servers are configured to accept changes to the database and, when a change is
12 made to the database in one server, the changed database is replicated in each of
13 the other servers.
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